Claims

1. A higher olefin polymer having a polar group which is produced by subjecting to an incorporation reaction of a polar compound or halogen compound into a higher α-olefin polymer satisfying the requirements of the following (1) and (2), which is obtained by polymerizing one or more higher α-olefins having 10 or more carbon atoms or copolymerizing one or more higher α-olefins having 10 or more carbon atoms with one or more other olefins.

(1) The content of units of a higher α-olefin having 10 or more carbon atoms is 50 mol% or more.

(2) A single peak X1 which is ascribed to the side chain crystallization and observed at 15 deg<2θ<30 deg in a wide-angle X-ray scattering intensity distribution is observed.

2. A higher olefin polymer having a polar group according to claim 1, wherein the higher olefin polymer having a polar group is produced by subjecting to an incorporation reaction of a polar compound or a halogen compound and a decomposer into a higher α-olefin polymer.

3. A higher olefin polymer having a polar group according to claim 1, wherein the higher olefin polymer having a polar group satisfies the requirements of the following (3) and (4).

(3) A polystyrene conversion weight-average molecular weight (Mw) measured by gel permeation chromatography (GPC) ranges from 1,000 to 100,000 and the molecular weight distribution (Mw/Mn) is 1.5 or more.

(4) A polar group contents or halogen contents range from 0.01 to 70% by weight.

4. A higher olefin polymer having a polar group according to claim 1, wherein the higher olefin polymer having a polar group satisfies the requirements of the following (3) and (4').

(3) A polystyrene conversion weight-average molecular weight (Mw) by measured by gel permeation chromatography (GPC) ranges from 1,000 to 100,000 and the molecular weight distribution (Mw/Mn) is 1.5 or more.

(4') A chlorine atom content ranges from 0.01 to 70% by weight.

5. A higher olefin polymer having a polar group according to claim 1, wherein the higher olefin polymer having a polar group satisfies the requirements of the following (5) and (6).

(5) The solubility into acetone/heptane (30/50 (volume ratio)) at 30°C at a polymer concentration from 10 to 20% by weight is 99% or more by weight.

(6) A surface tension of wetting tension testing is in the range of 300 to 400μN/cm.

6. A method for producing a higher olefin polymer having a polar group which is obtained by polymerizing one or more higher α-olefins having 10 or more carbon atoms or copolymerizing one or more higher α-olefins having 10 or more carbon atoms with one or more other olefins to form a higher α-olefin polymer satisfying the requirements of the following (1) and (2) and subsequently subjecting to an incorporation reaction of a polar compound or halogen compound into the higher α-olefin polymer.

(1) The content of units of a higher α-olefin having 10 or more carbon atoms is 50

mol% or more.

(2) A single peak X1 which is observed at 15 deg<2θ<30 deg in a wide-angle X-ray scattering intensity distribution and is ascribed to the side chain crystallization is observed.

7. A method for producing a higher olefin polymer having a polar group according to claim 6, wherein the method comprises obtaining the higher α-olefin polymer and subsequently subjecting to an incorporation reaction of a polar compound or a halogen compound and a decomposer.

8. A method for producing a higher olefin polymer having a polar group according to claim 6, wherein the polar compound is at least one kind of compounds selected from anhydrous maleic acid, acrylic acid and acrylic ester.

9. A method for producing a higher olefin polymer having a polar group according to claim 6, wherein the polar compound is at least one kind of components selected from chlorine or a chlorine containing compounds.